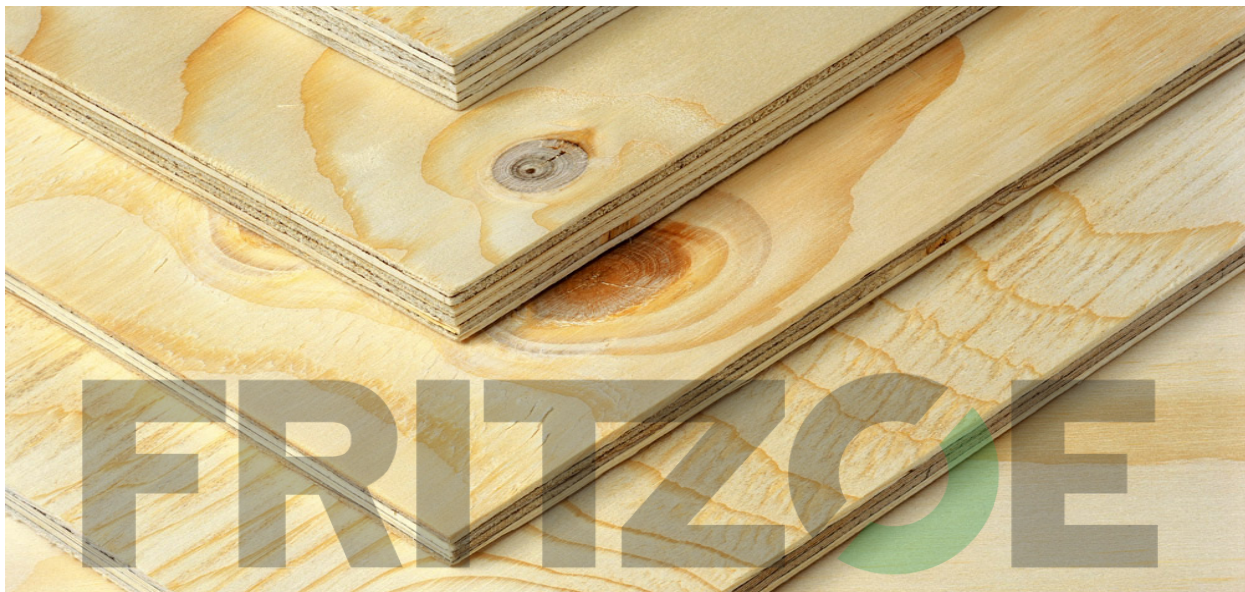


# ENVIRONMENTAL PRODUCT DECLARATION

## Metsä Wood Spruce Plywood Uncoated

The declaration has been prepared according to EN 16485 and EN 15804, which is based on the standards ISO 14040 and ISO 14044, ISO 14025 and ISO 21930. The results are based on the Life Cycle Assessment (LCA) approach taking into account the raw material sourcing, raw material transportation, raw material use and production operations (cradle to gate). The downstream processes are excluded.

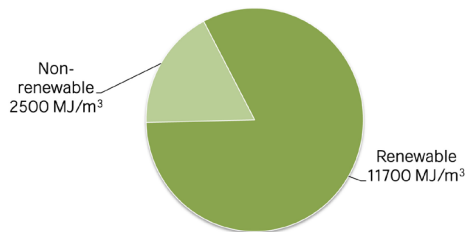


### Summary

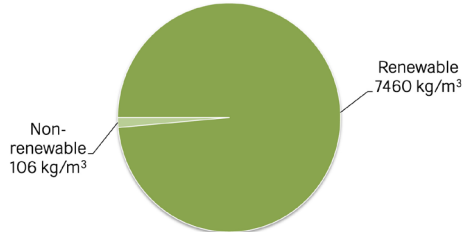
| IMPACT | UNIT | TOTAL |
|--------|------|-------|
|--------|------|-------|

|   |  |                         |
|---|--|-------------------------|
| Global warming potential; GWP                                       | kg CO <sub>2</sub> equiv./m <sup>3</sup> of product  | 121                     |
| Depletion potential of the stratospheric ozone layer; ODP           | kg CFC 11 equiv./m <sup>3</sup> of product           | 5.39 x 10 <sup>-9</sup> |
| Acidification potential of soil and water sources; AP               | kg SO <sub>2</sub> equiv. /m <sup>3</sup> of product | 0.909                   |
| Eutrophication potential; EP  | kg Phosphate equiv./m <sup>3</sup> of product        | 0.192                   |
| Formation of tropospheric ozone; POCP                               | kg Ethene equiv./m <sup>3</sup> of product           | 0.0555                  |
| Abiotic depletion potential (ADP-elements) for non-fossil resources | kg Sb equiv./m <sup>3</sup> of product               | 6.75 x 10 <sup>-5</sup> |
| Abiotic depletion potential (ADP-fossil fuels) for fossil resources | MJ, net caloric value/m <sup>3</sup> of product      | 2210                    |

Energy resources MJ/m<sup>3</sup> of product

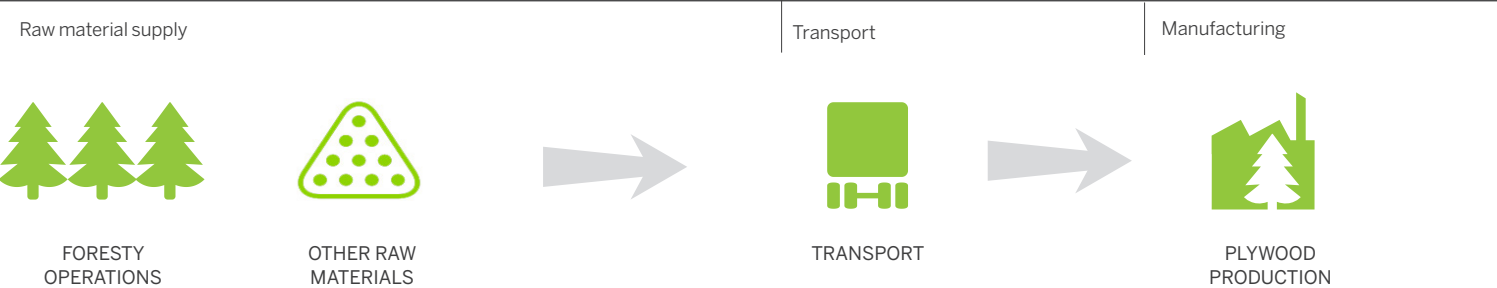


Material resources kg/m<sup>3</sup> of product



SCOPE OF THE DECLARATION

INCLUDED



1. PRODUCT DESCRIPTION

Metsä Wood Spruce is an uncoated softwood plywood manufactured from a long-grained, homogenous Nordic conifer with straight fibers. It is an excellent general purpose construction panel, ideal for both interior and exterior construction work and for any other uses where strength, stability and lightweight versatility is valued. More information can be obtained from the Metsä Wood Spruce Product Data Sheet.

Physical properties

- Mean density (RH65%, 20°C) 460 kg/m<sup>3</sup>
- Moisture content (delivered from the mill) 7–9%

Composition

- Wood (coniferous veneers)
- Phenol formaldehyde adhesive \*
- \* The adhesive does not contain chlorine or heavy metals.

Spruce plywood is manufactured at the Suolahti plywood mill in Finland.

1.1 CERTIFICATES

Metsä Forest, part of Metsä Group, is the only wood supplier for Metsä Wood mills in Finland. Metsä Forest, as well as Metsä Wood’s Suolahti plywood mill, have certified PEFC™ and FSC® Chain of Custody, and certified quality (ISO 9001) and environmental (ISO 14001) management systems in place, which include a wood origin tracking system. Thorough documentation and the latest technology, including digital maps, are used to track the wood flow from the forest to the mill.

Metsä Forest fulfils the obligations of European Union Regulation No. 995/2010 (EU Timber regulation), which prohibits the placing and trading of illegally harvested timber and timber products on the market. As all the wood raw material is covered by Chain of Custody certification, Metsä Wood knows the origin of all the wood it uses. The PEFC™ logo on the product ensures that 100% of the wood raw material is legally harvested, and at least 70% is sourced from certified forests.

1.2 HANDLING AFTER USE

Metsä Wood’s plywood products can be disposed in several ways. It should be noted that the instructions for disposal may vary by country depending on the current legislation.

Recycling of plywood by utilising it in other applications is always preferred, however, Metsä Wood’s plywood products can be safely burnt when the combustion temperature is at least 850°C, the combustion air and gases are well mixed, the retention time of the combustion gases in the furnace is over 2 seconds, and the residual oxygen content of the flue gases is over 6 %.

Gross heating value is 20 MJ/kg.

While the products can also be composted, the panels need to be chipped and the long duration of the composting process has to be taken into consideration. The products can also be taken to a refuse dump, although plywood products rot very slowly.

Metsä Wood’s plywood products do not contain anything classified as hazardous waste.

2. SCOPE OF DECLARATION

The following processes are included in the scope of the environmental product declaration:

PROCESSES OF RAW MATERIAL SUPPLY:  
Forestry operations; production of glues.

PROCESSES OF TRANSPORT AND MANUFACTURE:  
Production and transportation of energy, fuels, lubricants and packaging materials. Production of plywood. Transportation and treatment of waste landfilled and recycled for energy. Transportation of hazardous waste.

THE FOLLOWING PROCESSES HAVE BEEN EXCLUDED:  
The construction and maintenance of factory buildings and related infrastructure; the treatment of hazardous waste and the waste recycled by composting; the transportation of the finished product from mill to customer; construction process stages; the use and end-of-life stages.

## EXCLUDED



ENERGY



PACKAGING



WASTE MANAGEMENT



PRODUCTION  
FACILITIES



DISTRIBUTION



END-USER



DISPOSAL

### 3. USE OF RESOURCES

The use of resources and emissions are calculated per one cubic meter (1 m<sup>3</sup>) of product – including packaging. The results are presented according to EN 15942.

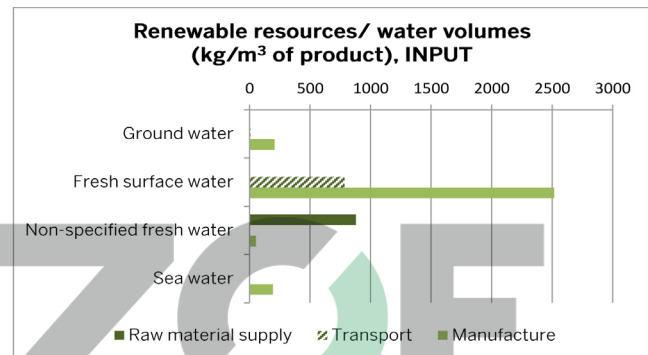
#### 3.1 USE OF PRIMARY ENERGY

| USE OF PRIMARY ENERGY<br>(MJ, NET CALORIFIC VALUE/M <sup>3</sup> OF PRODUCT)                           | PRODUCT STAGE             |                |   | TOTAL |
|--|---------------------------|----------------|---|-------|
|  | RAW<br>MATERIAL<br>SUPPLY | TRANS-<br>PORT | MANUFACTURING<br>(ENERGY, PACKAGING,<br>WASTE HANDLING) |       |
| Use of renewable primary energy excl. raw materials  | 0                         | 11             | 3890  | 3900  |
| Use of renewable primary energy resources used as raw materials  | 7830 *                    | 0              | 0   | 7830  |
| Total use of renewable primary energy resources  | 7830                      | 11             | 3890  | 11700 |
| Use of non-renewable primary energy excl. non-renewable primary energy resources used as raw materials | 1520                      | 287            | 698   | 2500  |
| Use of non-renewable primary energy resources used as raw materials                                    | 0                         | 0              | 0   | 0     |
| Total use of non-renewable primary energy resources  | 1520                      | 287            | 698   | 2500  |

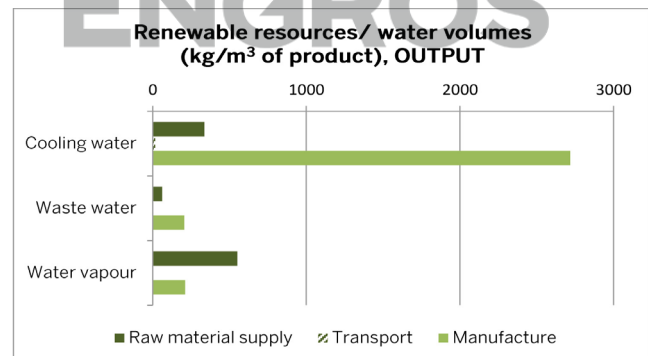
\* Mainly solar energy that is bound in wood during its growth.

#### 3.2 USE OF WATER

On a basis, about 98% of the resources of the product's life-cycle is renewable, the majority of that being water. Waters withdrawn for cooling and other process purposes are typically returned back to their source.



Water used by trees during their growth (i.e. 'green water') is not included.



Power plant's turbine water is not included.



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4. PRODUCT'S POTENTIAL ENVIRONMENTAL IMPACTS

Potential environmental impacts were estimated using CML2001-Apr. 2013 factors. The use of electricity and wood raw material have been allocated to plywood and co-products based on their economic values.

| PRODUCT STAGE   |   |                          |                          |                         |                         |
|---|---|--------------------------|--------------------------|-------------------------|-------------------------|
| IMPACT  | UNIT  | RAW MATERIAL SUPPLY      | TRANSPORT                | MANUFACTURING           | TOTAL                   |
| Global warming potential; GWP                                       | kg CO <sub>2</sub> equiv./m <sup>3</sup> of product | 68                       | 21                       | 32                      | 121                     |
| Depletion potential of the stratospheric ozone layer; ODP           | kg CFC 11 equiv./m <sup>3</sup> of product          | 4.09 x 10 <sup>-10</sup> | 9.91 x 10 <sup>-11</sup> | 4.88 x 10 <sup>-9</sup> | 5.39 x 10 <sup>-9</sup> |
| Acidification potential of soil and water sources; AP               | kg SO <sub>2</sub> equiv./m <sup>3</sup> of product | 0.420                    | 0.101                    | 0.387                   | 0.909                   |
| Eutrophication potential; EP  | kg Phosphate equiv./m <sup>3</sup> of product       | 0.0926                   | 0.0234                   | 0.0759                  | 0.192                   |
| Formation of tropospheric ozone; POCP                               | kg Ethene equiv./m <sup>3</sup> of product          | 0.0569                   | -0.0348                  | 0.0334                  | 0.0555                  |
| Abiotic depletion potential (ADP-elements) for non fossil resources | kg Sb equiv./m <sup>3</sup> of product              | 6.55 x 10 <sup>-5</sup>  | 7.80 x 10 <sup>-7</sup>  | 1.14 x 10 <sup>-6</sup> | 6.75 x 10 <sup>-5</sup> |
| Abiotic depletion potential (ADP-fossil fuels) for fossil elements  | MJ, net caloric value/m <sup>3</sup> of product     | 1460                     | 286                      | 465                     | 2210                    |

\* Biogenic carbon stored in the product is reported in Chapter 5.3.

5. OTHER ENVIRONMENTAL INFORMATION

5.1 EMISSIONS TO INDOOR AIR

Determined according to EN 717-1, the formaldehyde emitted by Metsä Wood Spruce plywood panels falls far below the Class E1 requirement of ≤ 0.100 ppm and also fulfils the most stringent requirements in the world (≤ 0.030 ppm). The formaldehyde emission of Metsä Wood Spruce is approximately 0.018 ppm. Metsä Wood Spruce also has M1 Finnish emission classification for building materials.

5.2 WASTE FRACTIONS FROM THE PLYWOOD PRODUCTION

| PRODUCT STAGE                 |                                    |               |
|-------------------------------|------------------------------------|---------------|
| WASTE CATEGORY                | UNIT                               | MANUFACTURING |
| Hazardous waste               | kg (wet)/m <sup>3</sup> of product | 0.1           |
| Non-hazardous waste disposed  | kg (wet)/m <sup>3</sup> of product | 0.3           |
| Materials for energy recovery | kg (wet)/m <sup>3</sup> of product | 0.6           |

5.3 CO<sub>2</sub> STORED IN THE PRODUCT

Plywood (1 m<sup>3</sup>) contains the stored carbon equivalent of 754 kg CO<sub>2</sub> stored in wood. Metsä Wood's certification systems guarantee the sustainability and traceability of wood raw materials (see 1.1.).



## 6. DEFINITIONS

**Acidification:** Occurs when the capacity of soil or water bodies to resist or neutralise acidifying atmospheric deposition begins to decline. It is caused by combustion gases, such as nitrogen and sulphur oxides ( $\text{SO}_x$ ) that react in the atmosphere to produce acids.

**CML2001-Apr.2013:** An impact assessment method developed at the University of Leiden, Centre of Environmental Studies (CML).

**Depletion of abiotic resources:** Consumption of non-renewable resources, such as zinc ore and crude oil, thereby lowering their availability for future generations.

**Eutrophication:** Eutrophication is caused by an addition of excess nitrogen and phosphorus nutrients to an eco-system, e.g. through waste waters. This boosts the growth of planktonic algae leading to reduced water clarity, oxygen depletion or changes in fish stocks.

**Global warming potential (GWP):** Global warming is caused by the increase of greenhouse gases in the atmosphere, such as carbon dioxide ( $\text{CO}_2$ ) that absorbs heat. GWP is calculated over a specific time period of 100 years (GWP100).

**Ozone depletion:** Ozone is an essential substance in the upper atmosphere (the stratosphere) where it screens out more than 99% of the dangerous ultraviolet radiation from the sun. Stratospheric ozone depletion refers to the thinning of the stratospheric ozone layer as a result of anthropogenic emissions of halons used as refrigerants, in fire extinguishers and other applications.

**Photochemical ozone creation:** Ozone in the lowest layer of the atmosphere is harmful for living organisms. It is formed when traffic emissions such as nitrogen oxides ( $\text{NO}_x$ ) and volatile organic hydrocarbons (VOCs), for example, react in the sunlight.

## 7. VERIFICATIONS

Date of publication: May 2014

Validity: until January 2019

Data reference year: 2012

European standard EN 15804 serves as the core PCR.

Independent verification of the declaration, according to ISO 14025:2010

☐ internal ☒ external

Third party verifier:

Inspecta (accredited environmental verifier)

VERIFIED BY

**Inspecta**

Note: EPD of construction products may not be comparable if they do not comply with the European standard EN 15804.

## 8. REFERENCES

EN 15804:2012. Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products.

EN 15942:2011. Sustainability of construction works. Environmental product declarations. Communication format business-to-business.

EN 16485:2014. Round and sawn timber – Environmental Product Declarations – Product category rules for wood and wood-based products for use in construction.

Origin of generic data: GaBi 6.3 Professional database and LIPASTO.

– A calculation system for traffic exhaust emissions and energy consumption in Finland (<http://lipasto.vtt.fi/>).

## LEGAL NOTICE

This Environmental Product Declaration is provided for information purposes only and no liability or responsibility of any kind is accepted by Metsä Wood or their representatives, although Metsä Wood has used reasonable efforts to verify the accuracy of any advice, recommendation or information. Metsä Wood reserves the right to alteration of its products, product information and product range without any notice.

FRITZOE  
ENGROS



**MetsäWood**



**MetsäWood**

# FRITZOE ENGROS

Metsä Group is a responsible forest industry group whose products' main raw material is renewable and sustainably grown Northern wood. Metsä Group focuses on tissue and cooking papers, consumer packaging paperboards, pulp, wood products, and wood supply and forest services. Its high-quality products combine renewable raw materials, customer-orientation, sustainable development and innovation. Metsä Group's sales totalled EUR 4.9 billion in 2013, and it employs approximately 11,000 people. The Group operates in some 30 countries. Metsäliitto Cooperative is the parent company of Metsä Group and is owned by approximately 123,000 Finnish forest owners.

Metsä Wood provides competitive and environmentally friendly wood products for construction, industrial customers and distributor partners. We manufacture products from Northern wood, a sustainable raw material of premium quality. Our sales in 2013 were EUR 897 million, and we employ about 2,500 people. Metsä Wood is part of Metsä Group. Our sales in 2013 were EUR 897 million, and we employ about 2,500 people. Metsä Wood is part of Metsä Group.

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